IBW AT McDONALD DRIVE
FCD GAGE ID# 4628

STATION DESCRIPTION

LOCATION – The gage is located in Scottsdale, Arizona just west of the intersection of Hayden Road and McDonald Drive. Latitude N33° 31' 26.5", Longitude W111° 54' 35.1". Located in the SE1/4 SE1/4 S11 T2N R4E in the Paradise Valley 7.5-minute quadrangle.

ESTABLISHMENT – The gage was installed November 24, 1997.

DRAINAGE AREA - 88 mi^2

GAGE – The gage is a pressure transducer type instrument located in the low flow channel about 60 feet left of the right bank wall. The PT diaphragm is at -1.90 feet gage height, or 1,260.00 feet NAVD 1988, levels of February 26, 2009.

There is one staff gage at this location. It is located on the left (east) bank of the wash, at the northeast corner. It reads in gage height, levels of February 26, 2009.

There is one crest stage gage at this location. The pin elevation is 0.21 feet gage height, or 1,262.11 feet NAVD 1988, levels of February 26, 2009.

ZERO GAGE HEIGHT – Zero gage height is defined as 0.00 on the staff gage, which is equal to 1,261.90 feet NAVD 1988.

HISTORY – The stage gage established on November 24, 1997. A crest gage was established on January 25, 2000. A small low flow channel was established as drainage from the Links Golf Course on the north side of McDonald Drive. Establishment was sometime in mid-2003. Level sensor was moved from the right bank to the low flow channel on July 27, 2004.

REFERENCE MARKS –

RM1: Corps of Engineers Brass Cap 78-106, located on the east end of the upstream (north) bridge rail. Elevation = 1,272.06 feet M.S.L. as surveyed; 1,273.01 feet NAVD 1988, and 11.11 feet gage height, levels of February 26, 2009.

RM2: Coast and Geodetic Brass Cap S473 (1981). Located on top of east upstream wingwall. Elevation = 1,267.76 feet M.S.L. as surveyed; 1,268.72 feet NAVD 1988, and 6.82 feet gage height, levels of February 26, 2009.

RP A: East end of bridge roadway, along the upstream rail. Elevation = 1,268.95 feet M.S.L., as surveyed; 1,269.89 feet NAVD 1988, as adjusted from MSL datum; and 8.00 feet gage height. Levels of December 4, 1997

RP-2 is the TBM established for the February 2009 RTK survey. It is located at the southwest corner of the intersection. The reference is a rebar. Elevation 1,268.89 feet NAVD 1988, and 6.98 feet gage height, levels of February 26, 2009.

CHANNEL AND CONTROL – The gage measures the low flow portion of the channel. Just upstream of the McDonald Drive bridge, all flows are contained within the channel. However, just upstream of the bridge, high flows are able to spill over Hayden Road into the high flow area. Upstream of McDonald Drive, water will spill over Hayden Road at approximately 5.4 feet gage height. When stage is greater than 3.1 feet gage height, there is a probability of spillage over Hayden Road at the McDonald Drive intersection.

The channel up and downstream of the gage is essentially a grass lined trapezoidal channel. During the summer of 1999, a golf course was constructed in the wash upstream of the bridge. The golf course extends upstream to just downstream of Indian Bend Road.

The bridge section at McDonald Drive and the low flow channel downstream is the control. The minimum channel elevation occurs in a low flow channel about 60 feet left from the right bank.

RATING – The current rating is Rating #4. It was developed from surveyed data and used in an HEC-RAS model. It is similar to previous ratings below 2,000 cfs, but diverges at higher stages. The rating needs to be monitored with upstream and downstream data to determine it effectiveness.

DISCHARGE MEASUREMENTS – Low flow measurements can be made by wading the channel. High flow discharges can be measured from the bridge at this location. Swift undercurrents may make this activity difficult.

POINT OF ZERO FLOW – The PZF is in a small trapezoidal low flow channel about 40 feet left of the right bank wall. Elevation -2.05 feet gage height, levels of November 5, 2003.

FLOODS – The largest flow of record occurred August 24, 2006. The peak stage was 3.83 feet and discharge of 3,718 cfs.

REGULATION – None of any consequence. There are numerous aesthetic lakes in the wash upstream.

DIVERSIONS – The small lakes for the golf course and recreation may divert some initial flow. There are no diversions of consequence.

ACCURACY – Fair

JUSTIFICATION – Monitor flood flows in Indian Bend Wash. Gage is also used to determine when flood stage approaches spilling across Hayden Road as part of the Scottsdale Flood Warning System.

UPDATE - July 19, 2011
D. E. Gardner